REMARKS

This Amendment is in response to the Office Action mailed Nov. 16, 2005. Claims 8 – 10, 12, 13 and 15 are pending and the Office Action rejected all claims. Specifically, Claim 12 was rejected under 35 U.S.C. § 112, Claims 8 – 10, 12 and 15 were rejected under 35 U.S.C. § 102(b) as being anticipated by Okawa (U.S. Patent No. 5,639,508). In addition, Claim 13 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Okawa.

In response, the applicant has amended Claims 8, 12, and 15 and provides the following remarks.

The present invention, as claimed in the amended claims, is a method of manufacturing a piezoelectric actuator, in which the actuator is not subjected to warping during the polarization process. The electrode layers are formed external to the other layers of the laminate, thereby reducing the potential warping effect. This is explained in the present application on page 15, lines 4 – 23, and illustrated in Fig. 5D, reproduced below:

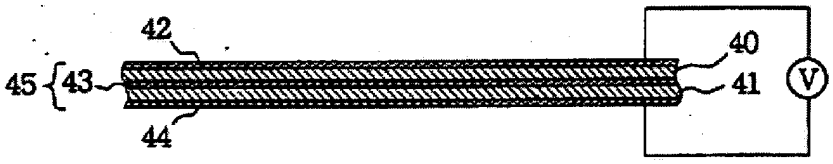

Fig. 5D (present application)

Then next, as shown in Fig. 5D, by applying voltage of several (kV) per 1 (mm) thickness between the first and the third conductor layers 42 and 44 of the multi-layer plate 45 in which the third conductor layer 44, the densified second sheet 41, the second conductor layer 43, the densified first sheet 40 and the first conductor layer 42 are successively laminated, the first sheet 40 will be polarized in the direction of its thickness (in the direction of an arrow z2).

In this case, as the method to polarize the first sheet 40, the method of placing the voltage between the first and the second conductor layers 42 and 43 is considered. However, according to this method there is the possibility of an occurrence of deflection in the multi-layer plate when the fist sheet 40 is shrunk due to polarization. Thus, according to this embodiment, as well as providing the third

conductor layer 44 under the second sheet 41, forming the second sheet 41 by the piezoelectric material, and by placing the voltage between the first and the third conductor layers 42 and 44 and polarizing both the first and the second sheets 40 and 41, the occurrence of unnecessary warp in the multi-layer plate 36 can be prevented.

In contrast to the present invention, Okawa discloses a structure wherein a voltage is applied across electrodes 53, 54a, 54b, 54 (col. 6:4-13), as cited by the Office Action. However, as clearly shown in Fig. 5 of Okawa (reproduced below), these electrodes are internal to the actuator structure and are not external to the other layers, as claimed in the presently amended claims. Thus, the structure of Okawa may suffer from warping during the polarization process (one problem the method of the present claims overcomes by using electrodes on the external edges of the actuator structure). For these reasons, Okawa does not mention how its polarization process overcomes problems of warping.

FIG. 5

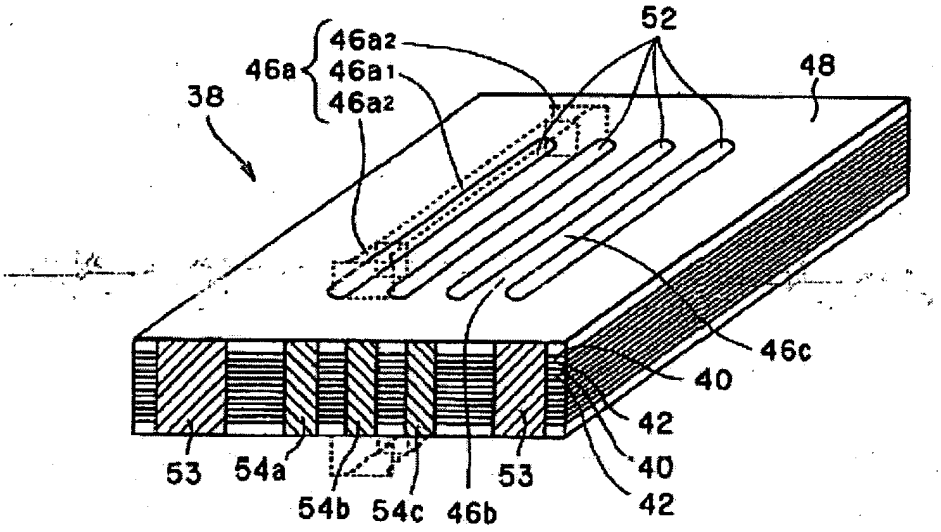

Fig. 5 (Okawa)

More particularly, Claim 8 recites that "the upper electrode layer and electrode layer for polarization are located external to any other layers of the actuator, such that by placing a voltage across a face surface of said upper electrode layer and a face surface of said electrode layer for polarization, said first sheet is polarized in the direction of a

thickness of the first sheet, whereby warping of the actuator during polarization is reduced."

Similarly, Claim 15 recites a step for "polarizing the first sheet in a direction of a thickness of the first sheet by placing a voltage across a face surface of the upper electrode layer and a face surface of the electrode layer for polarization, wherein the upper electrode layer and electrode layer for polarization are located external to any other layers of the actuator, thereby reducing warping of the actuator during polarization".

Such a method of polarization using the outside layers for polarization is simply not taught or suggested by Okawa. In Okawa, the electrodes used for polarization are internal to the structure, and therefore does not disclose or suggest the present method.

It is now believed that the present claims are in condition for allowance. If a telephone call will expedite the processing of this application, the Examiner is requested to contact the undersigned attorney at the telephone number listed below.

The Commissioner is hereby authorized to charge any fees (or credit any overpayment) associated with this communication and which may be required under 37 CFR §1.78 to Deposit Account No. 50-2603, **referencing Attorney Docket No. 353700.00110.** **A duplicate sheet is attached.**

Respectfully submitted,

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Dated: March 15, 2006

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as Express mail in an envelope addressed to: Commissioner for Patents, US Patent & Trademark Office, Alexandria, VA 22313-1450, on March 15, 2006.

Dated: March 15, 2006

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